provided on ancillary device **940**, or the return electrode may be positioned on the patient's body, as a dispersive pad (not shown).

Although active electrode **910** is shown in FIG. **42** as comprising a single apical electrode, other numbers, arrangements, and shapes for active electrode **910** are within the scope of the invention. For example, active electrode **910** can include a plurality of isolated electrodes in a variety of shapes. Active electrode **910** will usually have a smaller exposed surface area than return electrode **918**, such that the current density is much higher at active electrode **910** than at return electrode **918**. Preferably, return electrode **918** has a relatively large, smooth surfaces extending around shaft **902"** in order to reduce current densities in the vicinity of return electrode **918**, thereby minimizing damage to non-target tissue.

While bipolar delivery of a high frequency energy is the preferred method of debulking the nucleus pulposus, it should be appreciated that other energy sources (i.e., resistive, or the like) can be used, and the energy can be delivered with other methods (i.e., monopolar, conductive, or the like) to debulk the nucleus.

FIG. **43A** shows a steerable electrosurgical probe **950** including a shaft **952**, according to another embodiment of the invention. Preferably, shaft **952** is flexible and may assume a substantially linear configuration as shown. Probe **950** includes handle **904**, shaft distal end **952***a*, active electrode **910**, insulating collar **916**, and return electrode **918**. As can be seen in FIG. **43B**, under certain circumstances, e.g., upon application of a force to shaft **952** during guiding or steering probe **950** during a procedure, shaft distal end **952***a* can adopt a non-linear configuration, designated **952'***a*. The deformable nature of shaft distal end **952'***a* allows active electrode **910** to be guided to a specific target site within a disc.

FIG. **44** shows steerable electrosurgical probe **950** inserted within the nucleus pulposus of an intervertebral disc. An ancillary device **940** and ancillary introducer **928** may also be inserted within the nucleus pulposus of the same disc. To facilitate the debulking of the nucleus pulposus adjacent to a contained herniation, shaft **952** (FIG. **43A**) can be manipulated to a non-linear configuration, represented as **952'**. Preferably, shaft **955/952'** is flexible over at least shaft distal end **952***a* so as to allow steering of active electrode **910** to a position adjacent to the targeted disc abnormality. The flexible shaft may be combined with a sliding outer shield, a sliding outer introducer needle, pull wires, shape memory actuators, and other known mechanisms (not shown) for effecting selective deflection of distal end **952***a* to facilitate positioning of active electrode **910** within a disc. Thus, it can be seen that the embodiment of FIG. **44** may be used for the targeted treatment of annular fissures, or any other disc abnormality in which Coblation® is indicated.

In one embodiment shaft **952** has a suitable diameter and length to allow the surgeon to reach the target disc or vertebra by introducing the shaft through the thoracic cavity, the abdomen or the like. Thus, shaft **952** may have a length in the range of from about 5.0 cm to 30.0 cm, and a diameter in the range of about 0.2 mm to about 20 mm. Alternatively, shaft **952** may be delivered percutaneously in a posterior lateral approach. Regardless of the approach, shaft **952** may be introduced via a rigid or flexible endoscope. In addition, it should be noted that the methods described with reference to FIGS. **41** and **44** may also be performed in the absence of ancillary introducer **938** and ancillary device **940**.

Although the invention has been described primarily with respect to electrosurgical treatment of intervertebral discs, it is to be understood that the methods and apparatus of the invention are also applicable to the treatment of other tissues, organs, and bodily structures. For example, the principle of the "S-curve" configuration of the invention may be applied to any medical system or apparatus in which a medical instrument is passed within an introducer device, wherein it is desired that the distal end of the medical instrument does not contact or impinge upon the introducer device as the instrument is advanced from or retracted within the introducer device. The introducer device may be any apparatus through which a medical instrument is passed. Such a medical system or apparatus may include, for example, a catheter, a cannula, an endoscope, and the like. Thus, while the exemplary embodiments of the present invention have been described in detail, by way of example and for clarity of understanding, a variety of changes, adaptations, and modifications will be obvious to those of skill in the art. Therefore, the scope of the present invention is limited solely by the appended claims.

What is claimed is:

1. A method of treating an inter-vertebral disc, comprising:

a) contacting at least a first region of a nucleus pulposus of the inter-vertebral disc with at least one active electrode of an electrosurgical system, the at least one active electrode disposed on a shaft of an electrosurgical probe, and the at least one active electrode functionally coupled to a power supply unit; and

b) applying a first high frequency voltage between the at least one active electrode and at least one return electrode, wherein at least a portion of the nucleus pulposus is ablated and the volume of the nucleus pulposus is decreased.

2. The method of claim **1**, further comprising:

c) contacting at least a second region of the nucleus pulposus of the inter-vertebral disc with the at least one active electrode, and thereafter, repeating said step b).

3. The method of claim **1**, wherein during said step b), the at least one active electrode is translated within the nucleus pulposus, wherein a channel is formed within the nucleus pulposus, and translation of the at least one active electrode within the nucleus pulposus is implemented via movement of the probe.

4. The method of claim **3**, wherein movement of the probe is selected from the group consisting of axial movement, rotational movement, and concurrent axial and rotational movement.

5. The method of claim **1**, wherein said steps a) and b) result in formation of a channel within the nucleus pulposus, the channel having a channel wall, and the method further comprises:

d) positioning the at least one active electrode adjacent to the channel wall; and

e) coagulating tissue of the nucleus pulposus by applying a second high frequency voltage between the at least one active electrode and the at least one return electrode.

6. The method of claim **5**, wherein tissue at the channel wall is coagulated, and the nucleus pulposus undergoes a physical change selected from the group consisting of stiffening, increased rigidity, increased strength, decrease in volume, and decrease in mass.

7. The method of claim **5**, wherein the first high frequency voltage is in the range of from about 150 to about 700 volts rms, and the second high frequency voltage is in the range of from about 20 to about 150 volts rms.

8. The method of claim 5, wherein the first high frequency voltage is in the range of from about 150 to about 350 volts rms, and the second high frequency voltage is in the range of from about 20 to about 90 volts rms.

9. The method of claim 1, wherein the at least one active electrode and the at least one return electrode are disposed on a distal end of the shaft, and the at least one return electrode is spaced proximally from the at least one active electrode.

10. The method of claim 1, further comprising the step of:

f) prior to said step b), providing an electrically conductive fluid at the at least a first region of the nucleus pulposus.

11. The method of claim 10, wherein said step f) comprises applying the electrically conductive fluid to the at least one active electrode, or applying the electrically conductive fluid to the disc.

12. The method of claim 10, wherein the at least one active electrode and the at least one return electrode are disposed on a distal end of the shaft, and the at least one return electrode is spaced proximally from the at least one active electrode, and the electrically conductive fluid provides an electrically conductive path between the at least one active electrode and the at least one return electrode.

13. The method of claim 1, wherein the shaft includes a shaft distal end, and the shaft distal end is introduced into the nucleus pulposus via an introducer needle, the introducer needle includes a lumen and a needle distal end, the shaft distal end includes at least one curve therein, and the shaft distal end is retractable into the lumen without contacting the needle distal end.

14. The method of claim 1, wherein the shaft is visualized fluoroscopically or endoscopically.

15. The method of claim 1, wherein the at least one active electrode comprises an electrode head having a substantially apical spike and a substantially equatorial cusp, and the shaft includes an insulating collar located proximal to the electrode head.

16. The method of claim 15, wherein the insulating collar comprises a material selected from the group consisting of: a ceramic, a glass, and a silicone.

17. The method of claim 1, wherein the at least one active electrode includes a filament, the shaft includes a first insulating sleeve encasing the filament, a return electrode on the first insulating sleeve, and a second insulating sleeve on the return electrode.

18. The method of claim 1, wherein the shaft includes a shield encasing the shaft, wherein the shield decreases the amount of leakage current passing from the electrosurgical probe.

19. The method of claim 1, wherein the shaft includes a first curve and a second curve proximal to the first curve, the first curve and the second curve are in the same plane relative to the longitudinal axis of the shaft, and the first curve and the second curve are in different directions relative to the longitudinal axis of the shaft, the first curve is characterized by a first angle and the second curve is characterized by a second angle, wherein the first angle is less than the second angle.

20. The method of claim 1, wherein decreasing the volume of the nucleus pulposus relieves pressure exerted by the nucleus pulposus on an annulus fibrosus.

21. The method of claim 1, wherein decreasing the volume of the nucleus pulposus decompresses at least one nerve or nerve root, and discogenic pain is alleviated.

22. The method of claim 1, wherein during said step b), the at least one active electrode is axially translated within the nucleus pulposus to form a channel within the nucleus pulposus, wherein the channel is formed by a single straight pass of the shaft in the nucleus pulposus, and the channel has a volume in the range of from about 1 mm^3 to about 2,500 mm^3.

23. The method of claim 22, wherein the channel has a volume in the range of from about 10 mm^3 to about 2,500 mm^3.

24. The method of claim 22, wherein the channel has a diameter in the range of from about 0.5 mm to about 7.5 mm.

25. The method of claim 22, wherein the channel has a length in the range of from about 2 mm to about 50 mm.

26. The method of claim 1, wherein during said step b), the at least one active electrode is axially translated within the nucleus pulposus and concurrently therewith the shaft is rotated about its longitudinal axis, wherein the at least one active electrode forms a channel within the nucleus pulposus, the channel is formed by a single rotational pass of the shaft, wherein the at least one active electrode is disposed on a distal end of the shaft, the shaft includes at least one curve, and the channel has a volume in the range of from about 2 mm^3 to about 38,000 mm^3.

27. The method of claim 26, wherein the channel has a volume in the range of from about 50 mm^3 to about 10,000 mm^3.

28. The method of claim 1, wherein the shaft has a length in the range of from about 4 cm to about 30 cm, and the shaft has a diameter in the range of from about 0.5 mm to about 2.5 mm.

29. The method of claim 1, wherein the shaft includes a shaft distal end, and wherein the shaft distal end is introduced into the nucleus pulposus via an introducer needle, the introducer needle including a lumen, wherein the introducer needle has a length in the range of from about 3 cm to about 25 cm, and the lumen has a diameter in the range of from about 0.5 mm to about 2.5 mm.

30. The method of claim 1, wherein the method is performed percutaneously, and the at least a portion of the nucleus pulposus is ablated at a temperature in the range of from about 45° C. to about 90° C.

31. The method of claim 1, wherein the intervertebral disc is a lumbar disc, and the shaft has a length in the range of from about 10 cm to about 25 cm.

32. The method of claim 1, wherein the intervertebral disc is a cervical disc, and the shaft has a length in the range of from about 4 cm to about 15 cm.

33. A method of treating an inter-vertebral disc, comprising:

providing an electrosurgical system including a probe and a power supply unit, wherein the probe includes a shaft and a handle, the shaft including a distal end portion, at least one active electrode, and at least one return electrode, the at least one active electrode located on the distal end portion of the shaft, the distal end portion of the shaft having a pre-defined bias in the longitudinal direction thereof;

inserting the distal end portion of the shaft within the disc; and

ablating at least a portion of nucleus pulposus tissue from the disc, wherein at least one channel is formed within the nucleus pulposus.

34. The method of claim 33, wherein said ablating step comprises applying a first high frequency voltage between the at least one active electrode and the at least one return electrode, wherein a plasma is formed in the vicinity of the at least one active electrode, high molecular weight components of the nucleus pulposus tissue undergo molecular

dissociation to form low molecular weight gaseous materials, and the volume of the nucleus pulposus is decreased.

35. The method of claim 33, wherein said ablating step comprises ablating the nucleus pulposus tissue at a temperature in the range of from about 45° C. to about 90° C.

36. The method of claim 33, wherein said ablating step results in the production of ablation by-products, and the ablation by-products are aspirated from the disc by a suction device.

37. The method of claim 34, further comprising the step of:

removing the shaft from the disc, wherein said removing step causes the low molecular weight gaseous materials to be exhausted from the disc.

38. The method of claim 33, wherein said ablating step causes localized ablation of targeted disc tissue with minimal collateral damage to non-target tissue within the disc.

39. The method of claim 33, wherein said ablating step comprises applying a first high frequency voltage between the at least one active electrode and the at least one return electrode, and the method further comprises:

after said ablating step, applying a second high frequency voltage between the at least one active electrode and the at least one return electrode, wherein the second high frequency voltage is sufficient to coagulate disc tissue adjacent to the distal end portion of the shaft.

40. The method of claim 33, further comprising:

before said ablating step, contacting the at least one active electrode with a quantity of an electrically conductive fluid.

41. The method of claim 33, wherein said inserting step comprises advancing the shaft distal end portion via an introducer needle having a lumen and a needle distal end, wherein the shaft distal end portion is advanced distally beyond the needle distal end, wherein the at least one active electrode does not make contact with the needle distal end; and the method further comprises retracting the shaft distal end portion proximally within the lumen of the introducer needle, wherein the at least one active electrode does not make contact with the needle distal end.

42. The method of claim 33, wherein the shaft includes a shield, the shaft distal end portion includes a first curve, a second curve proximal to the first curve, and an insulating collar distal to the first curve, and the at least one active electrode comprises a filament and a head having an apical spike and an equatorial cusp.

43. A method of treating an inter-vertebral disc with an electrosurgical system, the electrosurgical system including a probe having a shaft, the shaft including a shaft distal end portion, an active electrode disposed on the shaft distal end portion, and a return electrode disposed proximal to the active electrode, the method comprising:

a) contacting a nucleus pulposus of the disc with the active electrode;

b) applying a high frequency voltage between the active electrode and the return electrode, wherein the high frequency voltage is sufficient to ablate disc tissue; and

c) during the applying step, translating the shaft distal end portion within the nucleus pulposus, wherein tissue of the nucleus pulposus is ablated and the volume of the nucleus pulposus is decreased.

44. The method of claim 43, wherein the shaft distal end portion includes a first curve and a second curve proximal to the first curve, wherein the first curve allows the active electrode to be retracted within an introducer needle without contacting the introducer needle.

45. The method of claim 44, wherein the second curve allows the active electrode to contact fresh tissue within the nucleus pulposus when the shaft is rotated about its longitudinal axis.

46. The method of claim 43, wherein the active electrode includes an electrode head having a substantially equatorial cusp and an apical spike, wherein the apical spike promotes high current density at the active electrode and facilitates axial translation of the shaft distal end portion within a tissue.

47. The method of claim 43, wherein the method is performed percutaneously, and the shaft distal end portion is introduced into the disc via an introducer needle.

48. The method of claim 43, wherein decrease in the volume of the nucleus pulposus leads to decompression of a nerve root and alleviation of discogenic pain.

49. The method of claim 48, wherein the discogenic pain is caused by a contained herniation, an annular fissure, or fragmentation of the nucleus pulposus.

50. The method of claim 43, further comprising:

d) inserting an ancillary introducer needle into the disc; and

e) advancing, via the ancillary introducer needle, an ancillary device into the nucleus pulposus, wherein the ancillary device comprises an endoscope, an optical fiber, an aspiration device, a fluid delivery assembly, or a return electrode.

51. The method of claim 43, wherein the shaft distal end portion includes a tracking device for indicating a location of the shaft distal end portion relative to the nucleus pulposus.

52. The method of claim 43, wherein the shaft includes at least one depth marking for indicating a location of the shaft distal end portion relative to the nucleus pulposus.

53. The method of claim 43, wherein said contacting step comprises:

f) advancing the shaft distally through the nucleus pulposus until the shaft distal end portion contacts an inner wall of an annulus fibrosus; and thereafter, retracting the shaft a defined distance.

54. The method of claim 43, further comprising the step of:

g) determining a depth of penetration of the shaft distal end portion within the disc.

55. The method of claim 54, wherein the shaft distal end portion is introduced into the disc via an introducer needle having an introducer proximal end, and said step g) comprises monitoring the position of the introducer proximal end relative to a mechanical stop or at least one depth marking.

56. The method of claim 54, wherein said step g) comprises:

h) advancing the shaft distal end portion through the nucleus pulposus until the shaft distal end portion contacts the annulus fibrosus; and thereafter,

i) retracting the shaft distal end portion a defined distance.

57. The method of claim 55, wherein said step g) comprises:

h) advancing the shaft distal end portion through the nucleus pulposus until the mechanical stop contacts a proximal end of the introducer needle.

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